

# CHEMISTRY IMPORTANT QUESTIONS

## KEY:-

- # SEM paper
- \* CT paper

## Unit 1

1. Coordination no. and geometry
2. Salient features CFT #
3. D-orbital splitting \*
4. Spectrochemical series
5. Magnetic properties
6. Isomerism \*#
7. CFSE calculation #
8. Periodic properties
9. Effective nuclear charge
10. Soft and hard acid
11. High and low spin complexes \*

## Unit 2

1. Enthalpy, entropy, Gibbs free energy
2. Applications of gibbs, helmholtz eqn \*#
3. Nernst eqn and application \*#
4. Solubility
5. Dry corrosion \*
6. Wet corrosion \*
7. Pourbiax theorem #

## Unit 3

1. Sketch SN1 reaction with its mechanism \*#
2. SN2 #
3. E2 mechanism #
4. Produce the Cahn Prelog rules \*
5. Analyse the conformational analysis of n-butane with neat diagram \*#

## Unit 4

1. Types of polymerisation
2. Thermoplastic & thermoset \*
3. Synthesis, Properties applications for
4. Polypropylene

5. Polystyrene
6. PVC \*#
7. Teflon \*#
8. Nylon \*
9. PET
10. Polyurethane
11. Synthetic rubber
12. Conducting polymer

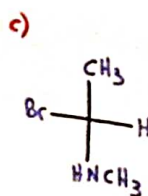
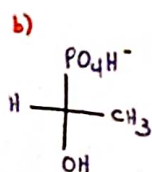
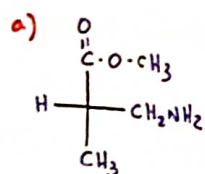
#### **Unit 5**

1. Mechanical properties of solids
2. Stress-strain curve \*#
3. Composite material \*#
4. FRP, MMC, CMC
5. XPS instrument \*#
6. Bragg's law

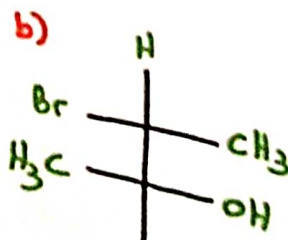
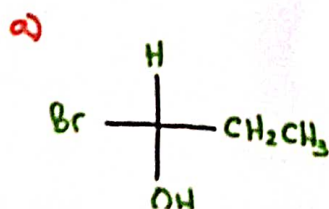
### Descriptive type Questions

1. Define the following with example.
  - a) Plane of symmetry
  - b) Centre of symmetry
  - c) Alternating axis of symmetry
2. Write a note on Geometrical isomerism.
3. Mention the specific type of isomerism exhibited by each of the following pairs:
  - i) Maleic acid and Fumaric acid
  - ii) n-Butyl alcohol and Diethyl ether
  - iii) Diethyl ether and Methyl propyl ether
4. What is Chirality? Differentiate Chirality and Achirality with example.
5. Differentiate between Enantiomers and Diastereomers.
6. Explain Sawhorse projection with an example.
7. Draw the Fischer projection of (S)-2-hydroxybutanoic Acid,  $\text{CH}_3\text{CH}_2\text{CH}(\text{OH})\text{COOH}$ .

Find R/S for each of the following Fischer Projections



8. Convert the following Fischer projections to Newman Projections



9. Write notes on Structural isomerism with its types and give examples.
10. Explain Newman projection with an example.

11. Write notes on Fischer projection.
12. Discuss the theory behind the electrode potential for an electrochemical cell.
13. What are electrophilic reagents? Explain its types.
14. What are nucleophilic reagents? Explain its types.
15. Explain  $S_N1$  mechanism of nucleophilic substitution reactions.
16. Explain  $S_N2$  mechanism of nucleophilic substitution reactions.
17. Give a brief account on electrophilic mechanism of addition reactions.
18. Give a brief account on nucleophilic mechanism of addition reactions.
19. Give a brief account on free radical mechanism of addition reactions.
20. What is the mechanism followed for anti-Markovnikov product? Explain.
21. With an example explain  $E_1$  mechanism of elimination reactions.
22. Explain  $E_2$  mechanism of elimination reactions.
23. What is  $E_{1cb}$  mechanism in elimination reactions? What are its criteria?
24. How alkenes are oxidized using  $KMnO_4$  reagent?
25. With examples write the oxidation reactions of  $K_2C_2O_7$
26. What is a reducing agent? Give an example with an equation.
27. What is the reaction of the following with Cyclopropane?
  - i. Halogens
  - ii. HI
  - iii. sulphuric acid
  - iv. Hydrogen
28. What is a drug? Give the use of Aspirin and Paracetamol.
29. Explain the role of the following reagents in reduction reactions.
  - a)  $NaBH_4$
  - b)  $LiAlH_4$
30. Explain Dieckmann condensation with an example.
31. Explain the mechanism involved in the synthesis of Paracetamol.
32. Explain the mechanism involved in the synthesis of Aspirin.
33. Write a brief account on optical activity in organic compounds with examples. Explain dextro rotatory, laevo rotatory, racemic, and meso as applied to optical isomers.



34. Explain Cahn-Ingold Prelog rules to determine R/S on a chiral center taking an example.
35. Explain in detail the conformational analysis of n-butane with potential energy diagram.